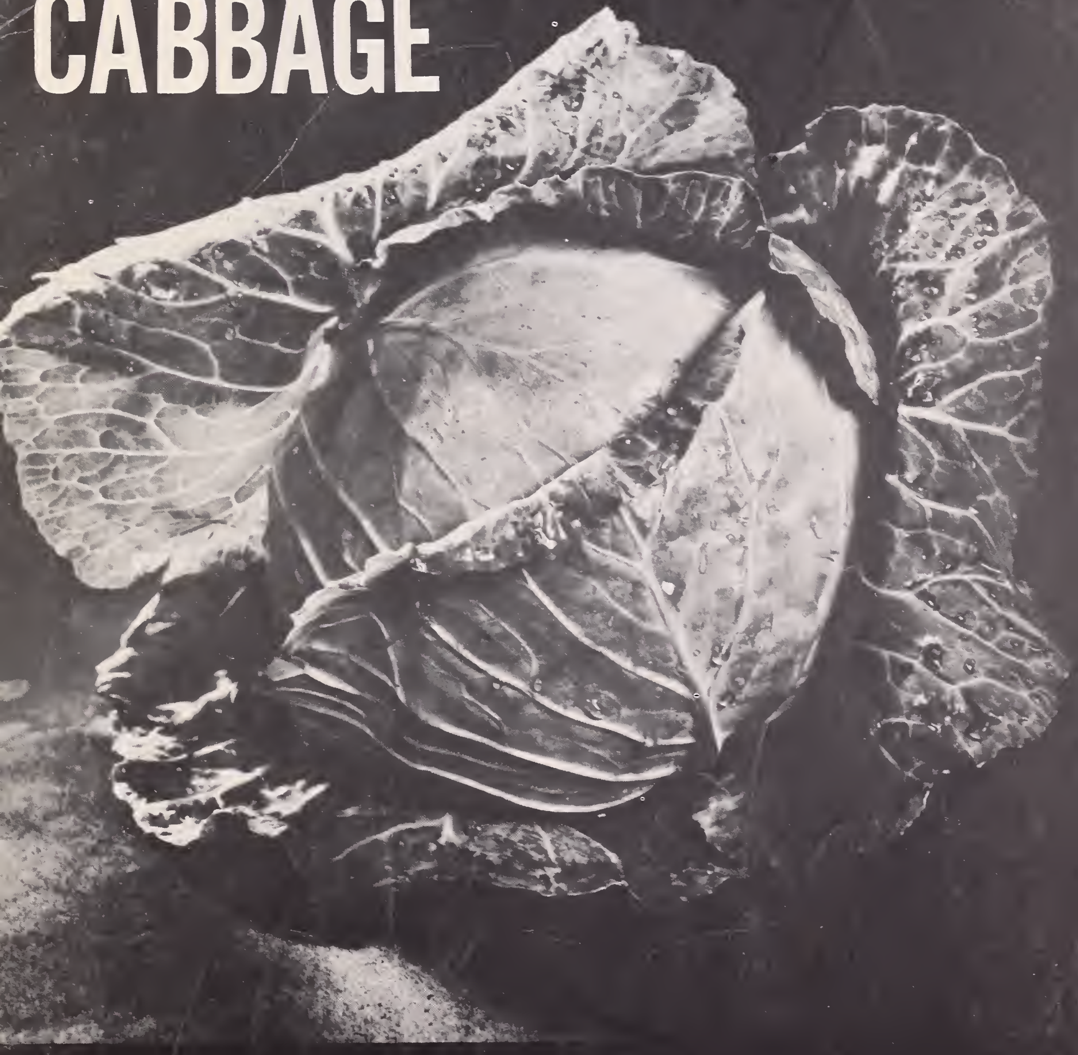
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

A.280.39
Ag 8 M
Marketing
Bulletin 21

FRESH CABBAGE
From Grower to Retailer



U.S. Department of Agriculture / Marketing Bulletin No. 21

FRESH CABBAGE

FOR BEST MARKET RESULTS

Leave defective heads in the field.

Provide careful supervision of trimming, grading, packaging, and loading for shipment.

Prevent damage by reasonable care in handling.

Ship or store at proper temperatures.

Sell on the basis of recognized standards.

CONTENTS

	Page
Types of cabbage—where they're grown and how they're used	1
Harvesting time and methods	4
Grading	6
Storing cabbage	7
Containers for marketing	8
Moving cabbage to market	9
Federal-State Inspection	9

This publication supersedes Farmers' Bulletin No. 1423, Preparation of Cabbage for Market

Issued November 1962

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C. - Price 10 cents

From Grower to Retailer

By W. W. Morrison, Marketing Specialist, Fruit and Vegetable Division, Agricultural Marketing Service

Cabbage is grown commercially in 34 of our 50 states. During 1960 and 1961 an average of approximately 136,000 acres were planted and the average production was approximately one and one quarter million tons. Since 1950 the yearly farm value has averaged well over 40 million dollars, which qualifies cabbage as one of our nationally important vegetable crops.

TYPES OF CABBAGE—WHERE THEY'RE GROWN AND HOW THEY'RE USED

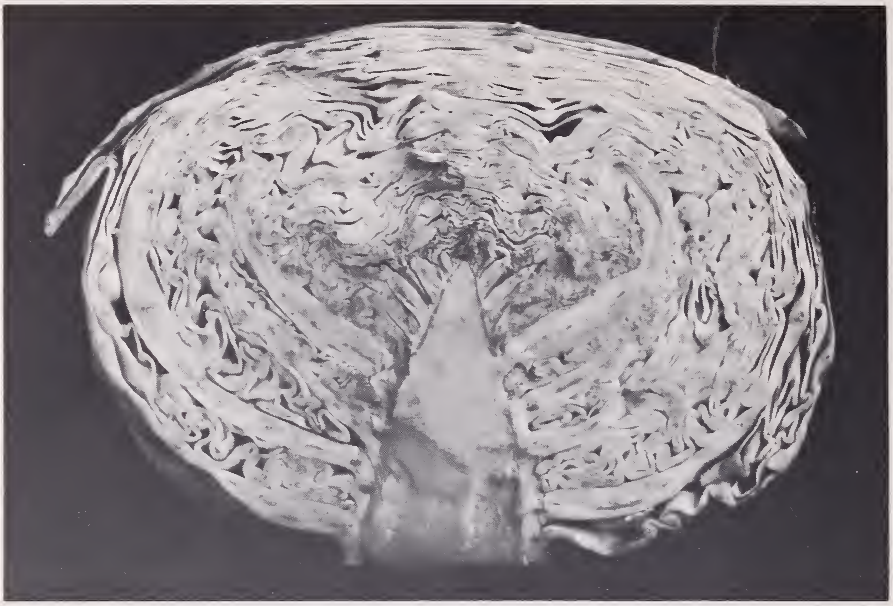
The cabbage industry generally classifies cabbage in five distinct commercial types: Danish, domestic, pointed, red, and savoy. This classification is based entirely upon terms generally adopted by members of the industry and has no direct connection with horticultural varieties or the regions where grown. The first three types are the most important from a commercial volume standpoint.

The term Danish is commonly applied to the solid-headed, late-maturing cabbage which is most commonly used for storage and late-marketing purposes and in a few areas is also used for sauerkraut processing. This type may be called Hollander in some locations. The heads usually have closely compacted leaves overlapping at the crown and are comparatively smooth and solid between the leaf midribs at the base even after successive head leaves are removed. The usual shape of the heads is round or oval, but may at times be somewhat flattened. The outline of the head as seen from above is smooth and regular. The outer-leaf midribs generally extend outward and upward at an angle from the stalk, making the base of the head appear rounded or elongated.

Domestic cabbage is usually not so compact as Danish but heads are reasonably solid. They are flat or round and appear somewhat angular in outline when the crown leaf is removed. Leaves are generally crinkled or curled and do not overlap at the crown as in Danish cabbage. At the base, the head is usually somewhat soft between the midribs of the leaves. Leaf growth tends to form a right angle with the stalk or even droop or curve downward slightly before curling upward to form and envelop the head. This gives the base of the head a flattened appearance. Domestic type grown for early season harvesting is practically all marketed as fresh cabbage. Late-summer or fall varieties are grown both for fresh marketing and for processing as sauerkraut.

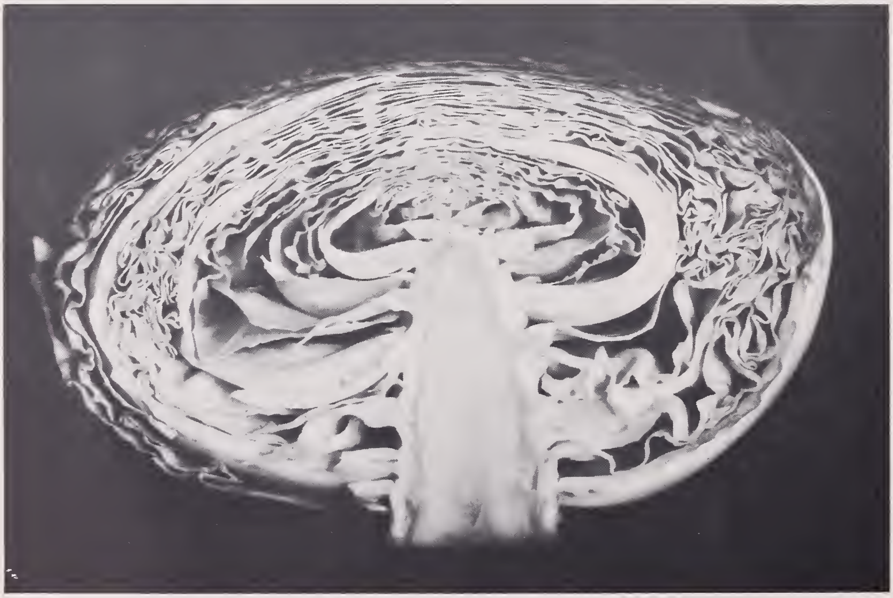
The shape of the heads, particularly those of Danish type, may vary considerably with differing soil, climatic or cultural conditions. Thus it is difficult at times to distinguish heads of Danish cabbage from those of domestic type when judged by shape alone.

The most accurate method of identification is to study a vertical cross section of the head by cutting it through the center. The typical



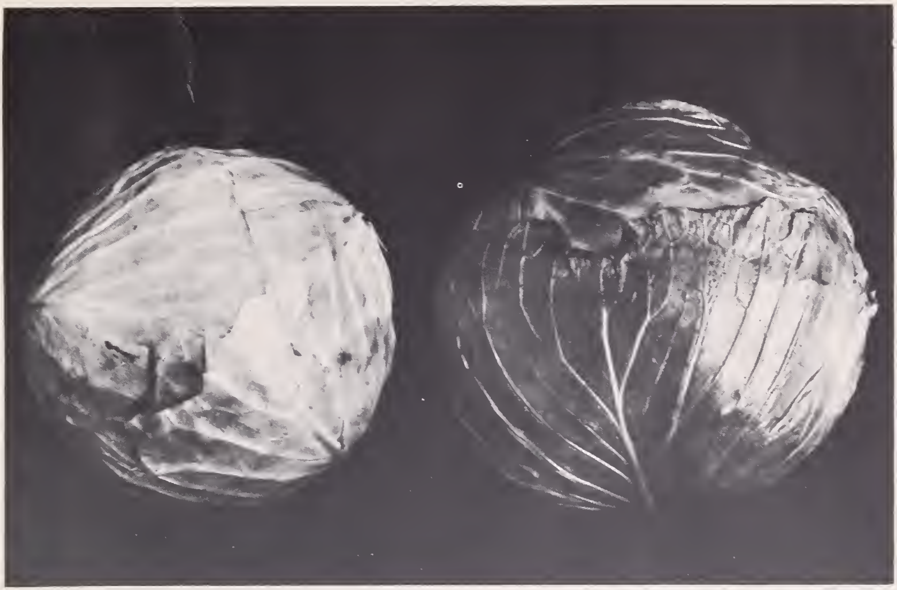
AMS 4131

FIGURE 1.—*Cross section of head of Danish or Hollander cabbage. Heads are very compact. The leaf midribs extend outward and upward from the stem. In the flatter types of Danish or Hollander this is not so pronounced.*



AMS 4133

FIGURE 2.—*Cross section of head of domestic cabbage. The heads are not so compactly formed as in Danish cabbage. The leaf midribs form a right angle with the stem or curve downward slightly.*



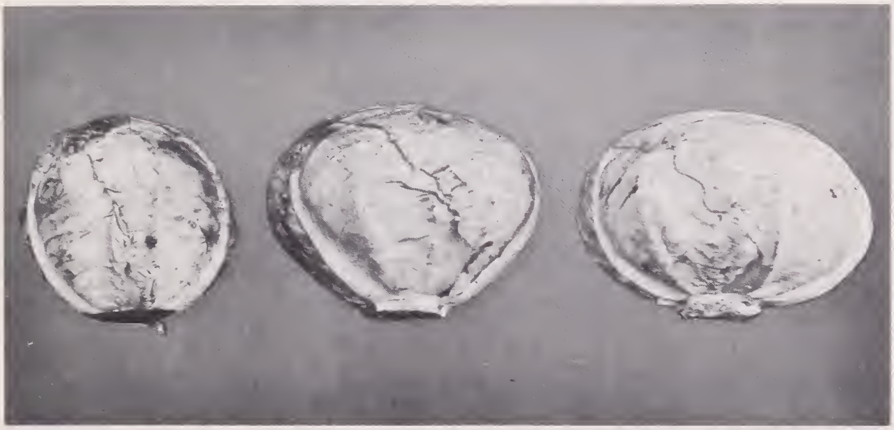
AMS 4139

FIGURE 3.—*Danish cabbage (left) is smoothly circular in outline as viewed from above. Domestic cabbage (right) is somewhat angular in outline.*

characteristics of these two types are shown in figures 1, 2, 3, and 4.

In most Northern States and some Western States both Danish and domestic types are grown extensively, whereas most of the cabbage grown in the South-Central, Southern, and South-Western States is domestic.

The pointed type is readily recognized by the conical or pointed shape of the head and the comparatively smooth leaf surfaces. This was formerly the leading type grown in some South-Eastern districts but it has been largely



AMS 4127

FIGURE 4.—*Three heads of Danish or Hollander cabbage, illustrating the typical round, balloon, and oval shapes.*

replaced by domestic in practically all producing areas.

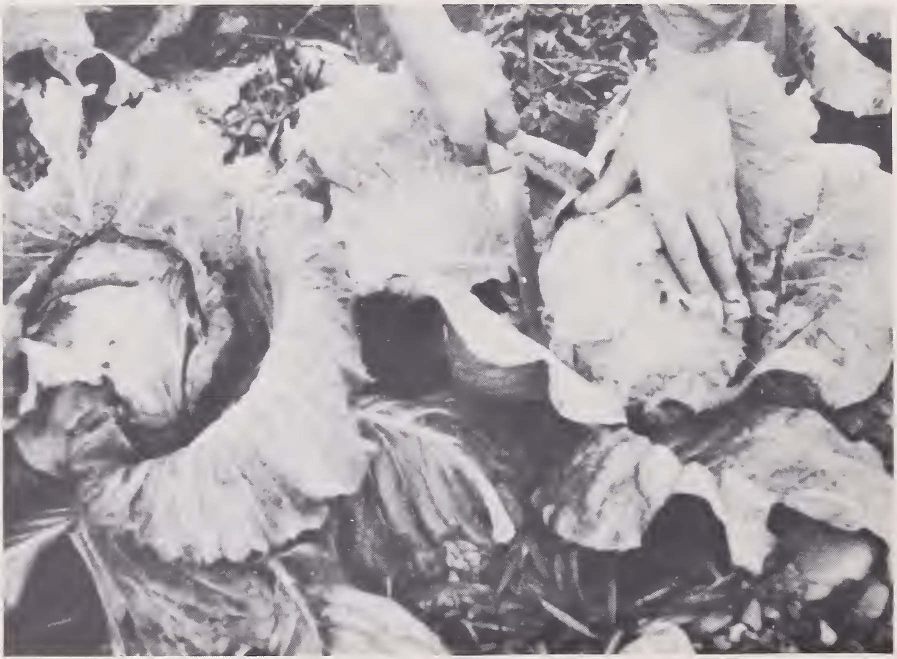
Red type is known by its red or purple color. Heads of most of the dark-red or purple varieties are as compact as Danish cabbage, but lighter-red varieties are usually only fairly hard and are comparable in solidity to round domestic. Red cabbage is grown in limited quantity as a field crop in several States and as a market-garden crop near many large cities. It is used principally for pickling and salad purposes.

Savoy type is grown in several States in very small quantities, usually as a speciality crop. The pronounced crumpling of the leaf tissue throughout the heads, as well as the yellowish-green color, are factors which readily identify the type. Usually, the heads are not much more compactly formed than head lettuce although in some varieties heads are reasonably hard.

HARVESTING TIME AND METHODS

Growers in most areas commonly judge the time for harvest by the solidity of heads, but since close timing is usually not a critical matter in harvesting cabbage, they also take the variables of price, weather, appearance and sometimes size into consideration in determining when to harvest.

Early crop cabbage is often harvested when it reaches marketable size without regard to maturity. Especially in southern areas, growers sometimes harvest at the



AMS 4163

FIGURE 5.—*Common method of harvesting is to sever the head from the stem with a large butcher knife.*

start of the season for price reasons alone, even though heads are still quite soft. This usually means a considerable loss in tonnage. Also, the quality of immature, soft cabbage is very difficult to maintain through the normal shipping processes. On the other hand, cabbage that is not harvested soon enough becomes over-ripe and must be closely trimmed. Such heads have a white appearance and are generally too brittle for long shipment.

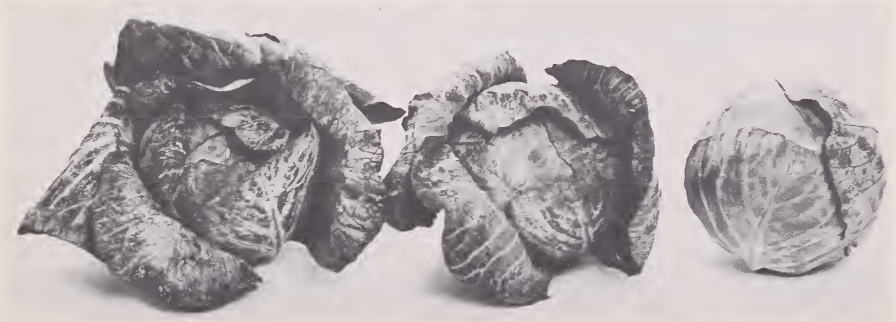
Growers throughout northern cabbage producing sections commonly allow the crop to stand until all of it can be harvested at one or two cuttings. Harvesting of Danish type often continues until the middle of November. Freezing temperatures frequently occur before harvesting is completed. When freezing is not severe, the outer leaves showing evidence of freezing are trimmed off as the cabbage is harvested. Harvesting is discontinued if freezing extends into the heads. With favorable weather heads will thaw in the field and may show no evidence of injury when outer leaves are trimmed away.

In those areas that supply the midseason market and in southern sections several cuttings are usually necessary because ripening extends over a long period.

In all areas, the usual method of harvesting is to sever the head from the stem with a heavy knife. This results in a straight, smooth, close cut when properly done by experienced workers (fig. 5).

Heads intended for immediate shipment are trimmed to the desired number of wrapper leaves as part of the harvesting process. "Green" or new cabbage is usually shipped with from 3 to 7 green wrapper leaves attached as illustrated by the left and center heads in figure 6. Wrapper leaves protect the heads, but can be removed at destination if this is necessary to give the lot a fresh appearance. Late crop cabbage is usually trimmed to not more than 4 closely fitting wrapper leaves. Any leaves showing material damage from worms, disease or other cause should be removed even if the result is a closely trimmed head. Stems of both "green" and "late crop" heads should be one-quarter to one-half inch in length.

Growers in some States use field containers, particularly where they store considerable amounts for later shipment. In other locations where a large portion of the crop is destined for immediate shipment, the heads are usually packed directly in shipping containers in the field as harvested. Many growers eliminate field containers by placing



BN 1892

FIGURE 6.—*A large percentage of the southern new cabbage crop is trimmed to 4 to 7 green wrapper leaves, as illustrated by the heads on the left and in the center; the right-hand head is closely trimmed.*

freshly harvested cabbage in field-trailers, trucks or tractor-pulled wagons to be hauled to packing-house or storage. Considerable care is necessary to prevent bruising with any method of handling closely trimmed heads.

GRADING

Grading is one of the most important factors in marketing fruits and vegetables and the attractive appearance of a neatly-trimmed, carefully-graded lot of cabbage justifies the extra time and attention needed to prepare it. High quality standards also build customers' good will and confidence.

Growers and shippers are becoming increasingly aware, too, that fresh, sound, firm cabbage brings a higher price than soft, puffy, over-leafy or wormy heads. They are trying to leave the poor stock in the field at cutting time. Cabbage that is poorly graded or in bad condition depresses demand, while uniformly good quality can stimulate demand.

Where cabbage is field packed it is usually graded by the cutters, who attempt to leave all defective heads in the fields. When cabbage is packaged in packing houses, limited field grading by cutters eliminates clearly defective heads, and the cabbage brought to the packing house has the benefit of further examination for grade conformity by graders and/or packers.

Small or medium weight cabbage is the most desirable market size. Consumers usually prefer heads of domestic and Danish cabbage weighing 2 to 6 pounds and heads of pointed cabbage ranging from 1 to 4 pounds. Heads weighing more than 6 pounds have limited retail demand.

Extreme irregularity in size within containers or lots should be avoided. Small, medium or large heads packed separately present a reasonably uniform appearance and often command a premium price even though cabbage is generally retailed by the pound rather than at a single price per head.

A large percentage of the cabbage crop is graded and packed to meet certain requirements of United States Standards, and cabbage is generally quoted and sold on the basis of these standards.

Standards now in effect for cabbage for fresh market sale provide requirements for U.S. No. 1, U.S. No. 1 Green, U.S. No. 1 New Red, U.S. Commercial, U.S. Commercial Green, and U.S. Commercial New Red. Principal factors considered in the U.S. No. 1 grade are trimming and solidity; freedom from withering, puffiness, bursting, soft rot and seedstems; and freedom from damage caused by discoloration, freezing, disease and insects. A provision for designating cabbage as U.S. No. 1 Green was added to the standards when green cabbage became popular with consumers. The requirements are the same as for U.S. No. 1 except that the heads must have at least a fairly good green color and may have as many as seven wrapper leaves (compared with a maximum of four wrapper leaves allowed in U.S. No. 1).

The requirements for the U.S. Commercial and U.S. Commercial Green grades are the same as for the U.S. No. 1 and U.S. No. 1 Green grades respectively, except that the heads need be only reasonably firm and an increased tolerance is allowed for defective heads. Most of the new cabbage from Southern areas is packed and sold as U.S. No. 1 Green or U.S. Commercial Green.

Standards for U.S. No. 1 New Red and U.S. Commercial New Red vary from U.S. No. 1 and U.S. Commercial, respectively, only in allowing as many as seven wrapper leaves.

In addition to the quality requirements, the standards set up three size classifications—"small," "medium," and "large." The size designation depends on the weight of the heads and the type of cabbage.

The United States Standards furnish a common terminology that may be used in describing a given shipment of cabbage, and thus provide a basis for contracts, sales, inspections and adjustments. If, for instance, a lot of cabbage is described as U.S. No. 1 Medium, both buyer and seller have a clear and definite understanding of both quality and size of the cabbage comprising the shipment without actually seeing the lot. The intelligent use of standardized grades not only minimizes the possibility of misunderstandings but also of fraud and deception. Most of the important cabbage-producing States have adopted the United States Standards for Cabbage as official State Standards, using them as the basis for official inspection.

STORING CABBAGE

Considerable cabbage tonnage is grown for storage in the Northern States, principally in New York, Wisconsin and Minnesota. Only Danish type cabbage can be stored for more than short periods without excessive shrinkage.

Cold storage of cabbage is very rare in production areas, although some experimental lots have been tried in cold storage by a few growers and shippers. Probably the two most important reasons that cabbage is generally held in common storage are these: the usual price of cabbage is not high enough to justify the cost of cold storage; and temperatures in the storage areas at harvest time are usually low enough so that artificial cooling is unnecessary. Under good common-storage conditions with temperatures from 32° to 35° F., late-crop cabbage may be stored 3 to 4 months before marketing.

The buildings used for storing cabbage are mostly storage houses specially built for the purpose, barns, or warehouses. They are reasonably frostproof and fitted with ventilators in or near the roof and along the lower walls. A driveway usually extends through the building with rows of bins along each side. These bins are commonly 3 to 4 feet in width, with double slatted partitions between, and built with about 6 inches of ventilating space between bins from top to bottom. In some instances the compartments are considerably wider with slatted racks which allow frequent vertical separations for improved ventilation.

Some grower-shippers, with buildings in which lift-trucks can be operated, are using large specially built pallet-boxes as both field containers and storage bins so that there is no handling of the cabbage from the time of harvest cutting until preparation for shipment.

Storage buildings often have to be heated with stoves or coke heaters during severely cold weather. During such weather or when the temperature fluctuates widely, storage buildings require considerable attention to prevent freezing and to insure proper ventilation.

Cabbage to be stored should be solid, and show no yellowing, decay, mechanical injury, or other defects. Heads should be trimmed to 3 to 6 tight wrapper leaves. Loose or excessive leaves interfere with the ventilation between heads which is essential to successful storage results.

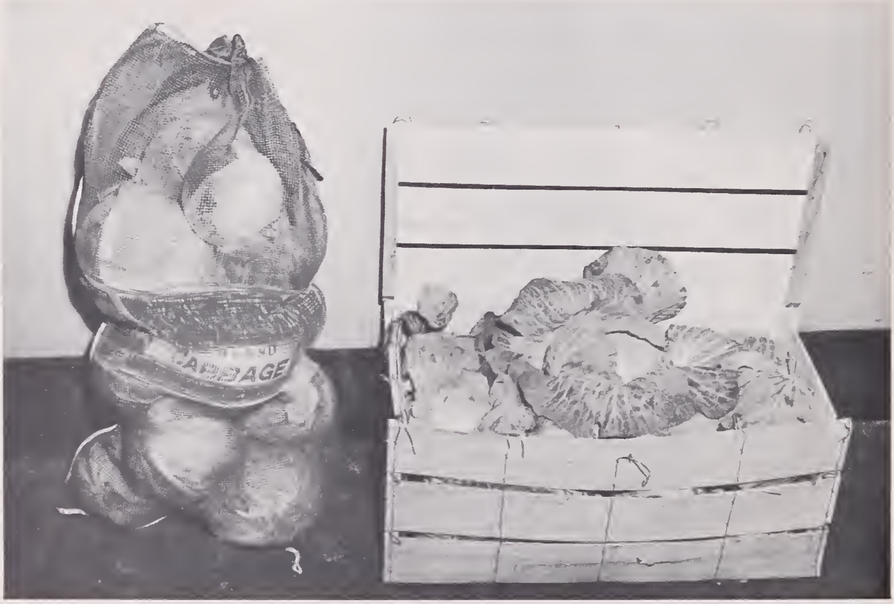
When cabbage is removed from storage for shipment, the stems are re-cut and enough outer leaves trimmed off to give the heads a fresh, undamaged appearance.

CONTAINERS FOR MARKETING

Most of the cabbage produced for fresh marketing is shipped in open-mesh sacks designed to hold 50 pounds, in wirebound crates which hold approximately the same amount (fig. 7), or in fiberboard cartons containing from 50 to 75 pounds. Occasional shipments are made in other container types or in bulk but the development of improved methods of loading, refrigeration and transportation of cabbage in sacks, wirebound crates, and cartons, plus the convenience of handling these packages has, in most producing areas, largely eliminated heavier containers or straight bulk loads for all but local shipments.

Sacks are suitable containers for cabbage if they are handled carefully enough to avoid bruising the heads, and the usual light green color of the open mesh material blends with the color of the cabbage to make an attractive package.

Nearly all of the cabbage produced in Louisiana, Minnesota, Pennsylvania, Wisconsin, Illinois, and New York, and approximately half of that produced in Georgia, Indiana, Michigan, North Carolina, Ohio, Texas, and Colorado is shipped to market in 50-pound mesh sacks. Most of the cabbage shipped from Florida and Virginia is packed in wirebound crates, and considerable quantities are also shipped in wirebound crates from Georgia, Michigan, North Carolina, Ohio and Texas. The Arizona crop is shipped almost exclusively in 60 to 75-pound cartons, while approximately half of the shipments from California are in 50 to 55-pound cartons, with most of the balance packed in W.G.A. nailed wooden crates. Oregon uses the W.G.A. crate for most of it's shipments, while vari-



N–16714

FIGURE 7.—*The most widely used containers for shipping cabbage to market are the 50-pound open mesh sack and a wirebound crate holding about the same amount.*

ous crates including the Los Angeles crate and the "pony" crate are used in Washington.

Cabbage packed in wirebound or other type crates should preferably be arranged in orderly layers with stems toward the outside. Heads should be pressed carefully into position to make a tight pack without crushing or excessive bruising. Covers should show a slight bulge to prevent damage from shifting of heads within the crates during transit and handling.

MOVING CABBAGE TO MARKET

A great majority of cabbage shipments now move to market by truck, although shippers in Arizona, California, Georgia, Texas, and Florida continue to use rail shipment for a considerable percentage of their crop. For long distance shipment, either refrigerator cars or refrigerator trucks are generally used to maintain proper temperature of the product regardless of outdoor temperature readings or fluctuations. In recent years, shippers have become increasingly aware of the importance of the rapid removal of field heat by hydro-cooling, vacuum cooling, or cooling with top ice over the load. It is now common practice to place a layer of crushed ice over car or truckloads of sacked or crated cabbage sufficient to maintain the desired low temperature in transit. The amount of ice used depends on the distance to destination and temperatures expected enroute. Cabbage packed in cartons should be hydrocooled before packing or adequately vacuum cooled and then shipped at temperatures maintained between 32° and 40° F. Shipments made during Winter months from Northern areas may require heater service in cars or trucks to prevent freezing damage.

FEDERAL-STATE INSPECTION

In most commercial cabbage producing areas, Federal-State inspection of shipments is available for a reasonable fee, to growers, shippers, buyers, or other financially interested parties. Federal inspection is also available at all major receiving markets.

The use of official United States standards and the inspection service greatly facilitates trading between shippers and market dealers. The standards furnish a basis for contracts and the inspection certificate indicates compliance or noncompliance with the quality provisions. Federal-State as well as Federal certificates are accepted in all United States Courts as prima facie evidence of the quality, grade, and condition of any shipment.

U.S. GOVERNMENT PRINTING OFFICE: 1962 O—646867